

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

HOBBS OCD
APR 11 2019
RECEIVEDLease Serial No.
NMNM0160973

1a. Type of Well ☒ Oil Well ☐ Gas Well ☐ Dry ☐ Other			6. If Indian, Allottee or Tribe Name		
b. Type of Completion ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr. Other _____			7. Unit or CA Agreement Name and No. NMNM138998		
2. Name of Operator COG OPERATING LLC			8. Lease Name and Well No. TIGERCAT FEDERAL COM 1H		
Contact: AMANDA AVERY E-Mail: aavery@concho.com					
3. Address ONE CONCHO CENTER 600 W ILLINOIS AVENUE MIDLAND, TX 79701-4287			9. API Well No. 30-025-44302-00-S1		
3a. Phone No. (include area code) Ph: 575-748-6940					
4. Location of Well (Report location clearly and in accordance with Federal requirements)* Sec 8 T26S R33E Mer NMP At surface NWNE 355FNL 1620FEL 32.064315 N Lat, 103.591003 W Lon Sec 8 T26S R33E Mer NMP At top prod interval reported below NWNE 355FNL 1620FEL 32.064315 N Lat, 103.591003 W Lon Sec 17 T26S R33E Mer NMP At total depth SESE 279FSL 968FEL 32.037037 N Lat, 103.588907 W Lon			10. Field and Pool, or Exploratory BRADLEY-BONE SPRING		
			11. Sec., T., R., M., or Block and Survey or Area Sec 8 T26S R33E Mer NMP		
			12. County or Parish LEA		13. State NM
14. Date Spudded 01/21/2018		15. Date T.D. Reached 02/17/2018	16. Date Completed ☐ D & A ☒ Ready to Prod. 09/20/2018		17. Elevations (DF, KB, RT, GL)* 3322 GL
18. Total Depth: MD 20302 TVD 10321		19. Plug Back T.D.: MD 20200 TVD 10321		20. Depth Bridge Plug Set: MD 20200 TVD 10321	
21. Type Electric & Other Mechanical Logs Run (Submit copy of each) 3322 GL			22. Was well cored? ☒ No ☐ Yes (Submit analysis) Was DST run? ☒ No ☐ Yes (Submit analysis) Directional Survey? ☐ No ☒ Yes (Submit analysis)		

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
8.750	5.500 P110	17.0		20272		3240		0	
17.500	13.375 J55	54.5	0	882		750		0	
12.250	9.625 K55	40.0	0	4950		1862		0	

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2.875	9674	9657						

25. Producing Intervals

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) BONE SPRING	10461	20105	10461 TO 20105		1620	
B)						
C)						
D)						

26. Perforation Record

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
10461 TO 20105	SEE ATTACHED

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
09/20/2018	09/20/2018	24	→	85.0	282.0	2813.0			ELECTRIC PUMP SUB-SURFACE
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
30/64	970	1700.0	→	85	282	2813		POW	

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
			→						

ACCEPTED FOR RECORD

MAR 19 2019

BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #442749 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED **

Reclamation due 3-20-2019

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	

29. Disposition of Gas(Sold, used for fuel, vented, etc.)
SOLD

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
RUSTLER	850			RUSTLER	850
TOP OF SALT	1181			TOP OF SALT	1181
BASE OF SALT	4635			BASE OF SALT	4635
LAMAR LS	4870			LAMAR LS	4870
BELL CANYON	4894			BELL CANYON	4894
BONE SPRING 1ST	9993			BONE SPRING 1ST	9993

32. Additional remarks (include plugging procedure):

33. Circle enclosed attachments:

- | | | | |
|---|--------------------|---------------|-----------------------|
| 1. Electrical/Mechanical Logs (1 full set req'd.) | 2. Geologic Report | 3. DST Report | 4. Directional Survey |
| 5. Sundry Notice for plugging and cement verification | 6. Core Analysis | 7 Other: | |

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions):

Electronic Submission #442749 Verified by the BLM Well Information System.

For COG OPERATING LLC, sent to the Hobbs

Committed to AFMSS for processing by DUNCAN WHITLOCK on 11/27/2018 (19DW0060SE)

Name (please print) AMANDA AVERY

Title AUTHORIZED REPRESENTATIVE

Signature (Electronic Submission)

Date 11/06/2018

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ****

DISTRICT I
1625 N. FRENCH DR., HOBBES, NM 88240
Phone: (505) 363-6161 Fax: (505) 363-0720

DISTRICT II
811 S. FIRST ST., ARTESIA, NM 88210
Phone: (505) 748-1283 Fax: (505) 748-9720

DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-025-44302	Pool Code 7280	Pool Name Bradley; Bone Spring
Property Code 320525	Property Name TIGERCAT FEDERAL COM	Well Number 1H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3322.4'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	8	26-S	33-E		355	NORTH	1620	EAST	LEA

Bottom Hole Location If Different From Surface

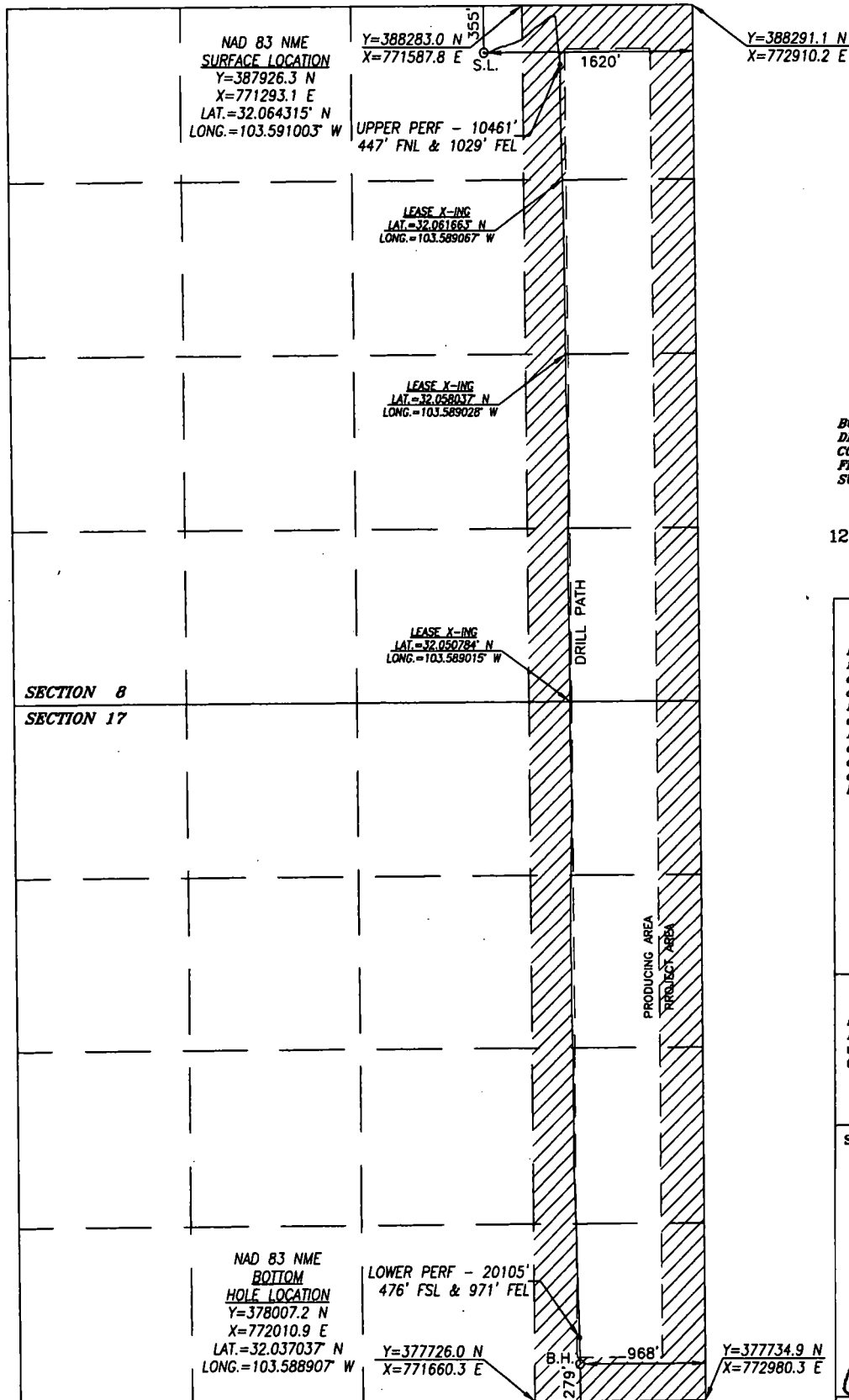
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	17	26-S	33-E		279	SOUTH	968	EAST	LEA

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
-----------------	-----------------	--------------------	-----------

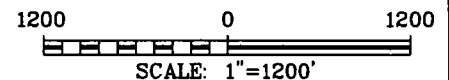
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

SEE PAGE 2

Property Code	Property Name TIGERCAT FEDERAL COM	Well Number 1H
OGRID No.	Operator Name COG OPERATING, LLC	Elevation 3322.4'



BOREPATH SHOWN HEREON IS BASED ON
DIRECTIONAL SURVEY REPORT PROVIDED BY
COG OPERATING, LLC FOR THE TIGERCAT
FEDERAL COM #1H SUPPLIED TO HARCROW
SURVEYING, LLC ON OCTOBER 26, 2018.



OPERATOR CERTIFICATION

I hereby certify that the information
herein is true and complete to the best of
my knowledge and belief, and that this
organization either owns a working interest
or unleased mineral interest in the land
including the proposed bottom hole location
or has a right to drill this well at this
location pursuant to a contract with an
owner of such mineral or working interest,
or to a voluntary pooling agreement or a
compulsory pooling order heretofore entered
by the division.

11/5/18

Signature

Date

Amanda Avery

Printed Name

aavery@concho.com

E-mail Address

SURVEYOR CERTIFICATION

I hereby certify that the well location
shown on this plat was plotted from field
notes of actual surveys made by me or
under my supervision, and that the same is
true and correct to the best of my belief.

AUG. 4, 2017, OCT. 25, 2018

Date of Survey/Date of Geographic Survey

Signature & Seal of Professional Surveyor



Chad Harcrow 11/5/18
Certificate No. CHAD HARCROW 17777



CONCHO

COG Operating L L C

Lea County, NM (NAD27 NME)

Sec. 8, T 26 S. , R 33 E

Tigercat Federal Com #1H

Wellbore #1

Design: Wellbore #1

Standard Survey Report

19 February, 2018



Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandriil Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandriil Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Project	Lea County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Sec. 8, T 26 S., R 33 E

Site Position:		Northing:	387,851.4000 usft	Latitude:	32.064180
From:	Map	Easting:	728,086.5000 usft	Longitude:	-103.597054
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.39 °

Well Tigercat Federal Com #1H, ACTIVE

Well Position	+N/-S	0.00 ft	Northing:	387,868.9000 usft	Latitude:	32.064190
	+E/-W	0.00 ft	Easting:	730,106.1000 usft	Longitude:	-103.590534
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	3,322.00 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/2/2018	6.80	59.73	47,873

Design Wellbore #1

Audit Notes:

Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	176.02

Survey Program Date 2/19/2018

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	9,670.00	Gyro Surveys (Wellbore #1)	Keeper	Standard Wireline Keeper ver 1.0.2
9,750.00	20,302.00	MWD Surveys (Wellbore #1)	MWD	MWD - Standard

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.45	114.22	100.00	-0.16	0.36	0.19	0.45	0.45	0.00
125.00	0.67	97.57	125.00	-0.22	0.59	0.26	1.09	0.88	-66.60
150.00	0.72	87.81	150.00	-0.23	0.89	0.30	0.51	0.20	-39.04
175.00	0.74	78.83	174.99	-0.20	1.21	0.28	0.46	0.08	-35.92
200.00	0.74	77.10	199.99	-0.13	1.53	0.23	0.09	0.00	-6.92
225.00	0.74	92.91	224.99	-0.10	1.84	0.23	0.81	0.00	63.24
250.00	0.66	86.48	249.99	-0.10	2.15	0.25	0.45	-0.32	-25.72
275.00	0.69	84.47	274.99	-0.08	2.44	0.25	0.15	0.12	-8.04
300.00	0.68	89.76	299.98	-0.06	2.74	0.25	0.26	-0.04	21.16



Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
325.00	0.77	76.47	324.98	-0.02	3.05	0.23	0.76	0.36	-53.16
350.00	0.73	87.07	349.98	0.03	3.37	0.21	0.58	-0.16	42.40
375.00	0.64	81.94	374.98	0.05	3.67	0.20	0.44	-0.36	-20.52
400.00	0.57	89.84	399.98	0.07	3.93	0.20	0.43	-0.28	31.60
425.00	0.51	93.74	424.98	0.07	4.17	0.22	0.28	-0.24	15.60
450.00	0.49	90.72	449.98	0.06	4.39	0.25	0.13	-0.08	-12.08
475.00	0.31	83.44	474.97	0.06	4.56	0.25	0.75	-0.72	-29.12
500.00	0.26	88.06	499.97	0.07	4.69	0.25	0.22	-0.20	18.48
525.00	0.23	84.35	524.97	0.08	4.79	0.25	0.14	-0.12	-14.84
550.00	0.23	102.43	549.97	0.07	4.89	0.27	0.29	0.00	72.32
575.00	0.12	129.12	574.97	0.05	4.96	0.30	0.54	-0.44	106.76
600.00	0.22	131.23	599.97	0.00	5.02	0.35	0.40	0.40	8.44
625.00	0.17	92.99	624.97	-0.03	5.09	0.39	0.54	-0.20	-152.96
650.00	0.10	155.06	649.97	-0.06	5.14	0.41	0.61	-0.28	248.28
675.00	0.06	243.72	674.97	-0.08	5.13	0.44	0.46	-0.16	354.64
700.00	0.20	290.12	699.97	-0.07	5.08	0.43	0.66	0.56	185.60
725.00	0.32	278.01	724.97	-0.05	4.97	0.39	0.53	0.48	-48.44
750.00	0.35	270.89	749.97	-0.04	4.83	0.37	0.21	0.12	-28.48
775.00	0.38	295.37	774.97	0.00	4.67	0.33	0.63	0.12	97.92
800.00	0.39	294.53	799.97	0.07	4.52	0.24	0.05	0.04	-3.36
825.00	0.41	288.64	824.97	0.13	4.36	0.17	0.18	0.08	-23.56
850.00	0.48	273.26	849.97	0.17	4.17	0.12	0.55	0.28	-61.52
875.00	0.46	278.22	874.97	0.19	3.97	0.09	0.18	-0.08	19.84
900.00	0.43	253.28	899.97	0.18	3.78	0.09	0.78	-0.12	-99.76
925.00	0.44	265.35	924.97	0.14	3.59	0.11	0.37	0.04	48.28
950.00	0.50	265.04	949.97	0.12	3.39	0.11	0.24	0.24	-1.24
975.00	0.37	263.58	974.97	0.11	3.20	0.12	0.52	-0.52	-5.84
1,000.00	0.45	138.47	999.97	0.02	3.18	0.20	2.91	0.32	-500.44
1,025.00	1.25	114.35	1,024.96	-0.16	3.50	0.40	3.44	3.20	-96.48
1,050.00	1.72	116.35	1,049.95	-0.44	4.08	0.72	1.89	1.88	8.00
1,075.00	1.92	113.77	1,074.94	-0.78	4.80	1.11	0.86	0.80	-10.32
1,100.00	1.99	107.51	1,099.93	-1.08	5.60	1.46	0.90	0.28	-25.04
1,125.00	2.15	111.81	1,124.91	-1.38	6.45	1.83	0.89	0.64	17.20
1,150.00	2.11	111.09	1,149.89	-1.72	7.31	2.22	0.19	-0.16	-2.88
1,175.00	2.11	113.16	1,174.88	-2.07	8.17	2.63	0.30	0.00	8.28
1,200.00	2.24	107.86	1,199.86	-2.40	9.05	3.02	0.96	0.52	-21.20
1,225.00	2.25	109.23	1,224.84	-2.71	9.98	3.40	0.22	0.04	5.48
1,250.00	2.25	105.62	1,249.82	-3.00	10.92	3.75	0.57	0.00	-14.44
1,275.00	2.39	101.71	1,274.80	-3.24	11.90	4.06	0.84	0.56	-15.64
1,300.00	2.68	95.69	1,299.78	-3.41	12.99	4.30	1.57	1.16	-24.08
1,325.00	2.80	90.76	1,324.75	-3.47	14.19	4.45	1.06	0.48	-19.72
1,350.00	2.92	88.18	1,349.72	-3.46	15.43	4.52	0.70	0.48	-10.32
1,375.00	2.91	88.22	1,374.68	-3.42	16.70	4.57	0.04	-0.04	0.16



Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,400.00	2.97	89.04	1,399.65	-3.39	17.98	4.63	0.29	0.24	3.28
1,425.00	3.03	87.27	1,424.62	-3.35	19.29	4.68	0.44	0.24	-7.08
1,450.00	3.17	88.33	1,449.58	-3.29	20.64	4.72	0.61	0.56	4.24
1,475.00	3.26	86.57	1,474.54	-3.23	22.04	4.75	0.53	0.36	-7.04
1,500.00	3.32	84.00	1,499.50	-3.11	23.47	4.74	0.64	0.24	-10.28
1,525.00	3.39	85.08	1,524.46	-2.97	24.93	4.70	0.38	0.28	4.32
1,550.00	3.55	82.97	1,549.41	-2.82	26.43	4.64	0.82	0.64	-8.44
1,575.00	3.71	79.44	1,574.36	-2.57	28.00	4.51	1.10	0.64	-14.12
1,600.00	3.69	77.60	1,599.31	-2.25	29.58	4.30	0.48	-0.08	-7.36
1,625.00	3.76	76.32	1,624.26	-1.89	31.16	4.04	0.43	0.28	-5.12
1,650.00	3.96	74.68	1,649.20	-1.46	32.79	3.74	0.91	0.80	-6.56
1,675.00	4.00	75.83	1,674.14	-1.02	34.47	3.41	0.36	0.16	4.60
1,700.00	4.04	75.67	1,699.08	-0.59	36.17	3.10	0.17	0.16	-0.64
1,725.00	4.10	74.90	1,724.01	-0.14	37.88	2.77	0.32	0.24	-3.08
1,750.00	4.07	75.62	1,748.95	0.31	39.60	2.44	0.24	-0.12	2.88
1,775.00	4.13	74.62	1,773.89	0.77	41.33	2.10	0.37	0.24	-4.00
1,800.00	4.05	74.17	1,798.82	1.25	43.05	1.74	0.34	-0.32	-1.80
1,825.00	3.91	72.00	1,823.76	1.76	44.71	1.35	0.82	-0.56	-8.68
1,850.00	3.43	70.37	1,848.71	2.27	46.22	0.94	1.96	-1.92	-6.52
1,875.00	3.34	69.23	1,873.67	2.78	47.61	0.53	0.45	-0.36	-4.56
1,900.00	3.37	67.98	1,898.62	3.31	48.97	0.09	0.32	0.12	-5.00
1,925.00	3.36	67.14	1,923.58	3.87	50.33	-0.37	0.20	-0.04	-3.36
1,950.00	3.33	66.73	1,948.54	4.45	51.67	-0.85	0.15	-0.12	-1.64
1,975.00	3.28	67.47	1,973.50	5.01	53.00	-1.32	0.26	-0.20	2.96
2,000.00	3.41	66.97	1,998.45	5.57	54.34	-1.79	0.53	0.52	-2.00
2,025.00	3.56	65.77	2,023.41	6.18	55.73	-2.30	0.67	0.60	-4.80
2,050.00	3.67	65.25	2,048.36	6.83	57.17	-2.85	0.46	0.44	-2.08
2,075.00	3.61	64.92	2,073.31	7.50	58.61	-3.42	0.25	-0.24	-1.32
2,100.00	3.78	66.18	2,098.26	8.17	60.08	-3.98	0.75	0.68	5.04
2,125.00	3.89	64.70	2,123.20	8.86	61.60	-4.57	0.59	0.44	-5.92
2,150.00	3.92	65.74	2,148.14	9.58	63.14	-5.17	0.31	0.12	4.16
2,175.00	3.85	64.88	2,173.09	10.28	64.68	-5.77	0.36	-0.28	-3.44
2,200.00	3.77	64.68	2,198.03	10.99	66.18	-6.37	0.32	-0.32	-0.80
2,225.00	3.39	66.16	2,222.98	11.64	67.60	-6.92	1.56	-1.52	5.92
2,250.00	3.38	66.44	2,247.94	12.24	68.95	-7.42	0.08	-0.04	1.12
2,275.00	3.44	66.29	2,272.89	12.83	70.32	-7.92	0.24	0.24	-0.60
2,300.00	3.42	65.29	2,297.85	13.45	71.68	-8.44	0.25	-0.08	-4.00
2,325.00	3.48	65.92	2,322.80	14.07	73.05	-8.96	0.28	0.24	2.52
2,350.00	3.43	65.96	2,347.76	14.68	74.43	-9.48	0.20	-0.20	0.16
2,375.00	3.54	64.38	2,372.71	15.32	75.81	-10.02	0.58	0.44	-6.32
2,400.00	3.66	62.53	2,397.66	16.02	77.21	-10.62	0.67	0.48	-7.40
2,425.00	3.62	62.39	2,422.61	16.76	78.62	-11.26	0.16	-0.16	-0.56
2,450.00	3.59	64.01	2,447.56	17.46	80.02	-11.87	0.42	-0.12	6.48



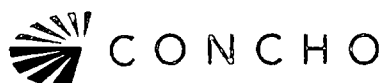
Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandriil Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandriil Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,475.00	3.70	63.36	2,472.51	18.17	81.44	-12.47	0.47	0.44	-2.60
2,500.00	3.33	61.61	2,497.46	18.88	82.80	-13.08	1.54	-1.48	-7.00
2,525.00	3.10	61.20	2,522.43	19.55	84.04	-13.67	0.92	-0.92	-1.64
2,550.00	2.89	60.86	2,547.39	20.18	85.18	-14.22	0.84	-0.84	-1.36
2,575.00	2.73	57.62	2,572.36	20.81	86.23	-14.77	0.90	-0.64	-12.96
2,600.00	2.70	56.45	2,597.33	21.45	87.22	-15.34	0.25	-0.12	-4.68
2,625.00	2.73	58.10	2,622.30	22.09	88.22	-15.91	0.33	0.12	6.60
2,650.00	2.78	57.49	2,647.28	22.73	89.24	-16.48	0.23	0.20	-2.44
2,675.00	2.81	56.65	2,672.25	23.39	90.26	-17.07	0.20	0.12	-3.36
2,700.00	2.87	56.93	2,697.22	24.07	91.30	-17.68	0.25	0.24	1.12
2,725.00	3.03	55.13	2,722.18	24.79	92.36	-18.32	0.74	0.64	-7.20
2,750.00	3.17	54.91	2,747.15	25.57	93.47	-19.02	0.56	0.56	-0.88
2,775.00	3.39	57.21	2,772.10	26.36	94.66	-19.73	1.03	0.88	9.20
2,800.00	3.51	55.61	2,797.06	27.20	95.91	-20.47	0.62	0.48	-6.40
2,825.00	3.43	57.18	2,822.01	28.03	97.17	-21.22	0.50	-0.32	6.28
2,850.00	3.38	59.20	2,846.97	28.82	98.43	-21.91	0.52	-0.20	8.08
2,875.00	3.15	66.21	2,871.93	29.47	99.69	-22.48	1.84	-0.92	28.04
2,900.00	3.03	72.08	2,896.89	29.95	100.95	-22.87	1.35	-0.48	23.48
2,925.00	3.08	72.94	2,921.86	30.35	102.22	-23.18	0.27	0.20	3.44
2,950.00	3.05	74.54	2,946.82	30.73	103.51	-23.47	0.36	-0.12	6.40
2,975.00	3.19	72.47	2,971.78	31.11	104.81	-23.76	0.72	0.56	-8.28
3,000.00	3.24	67.58	2,996.75	31.59	106.13	-24.15	1.11	0.20	-19.56
3,025.00	3.22	67.82	3,021.71	32.13	107.43	-24.59	0.10	-0.08	0.96
3,050.00	3.34	64.93	3,046.66	32.70	108.74	-25.07	0.82	0.48	-11.56
3,075.00	3.38	61.95	3,071.62	33.35	110.05	-25.64	0.72	0.16	-11.92
3,100.00	3.34	64.79	3,096.58	34.01	111.36	-26.20	0.68	-0.16	11.36
3,125.00	3.46	64.32	3,121.53	34.65	112.70	-26.74	0.49	0.48	-1.88
3,150.00	3.66	63.72	3,146.49	35.33	114.09	-27.32	0.81	0.80	-2.40
3,175.00	3.75	63.50	3,171.43	36.05	115.54	-27.94	0.36	0.36	-0.88
3,200.00	3.71	63.60	3,196.38	36.77	117.00	-28.56	0.16	-0.16	0.40
3,225.00	3.60	65.78	3,221.33	37.45	118.44	-29.14	0.71	-0.44	8.72
3,250.00	3.47	70.54	3,246.28	38.03	119.87	-29.62	1.28	-0.52	19.04
3,275.00	3.34	76.62	3,271.24	38.45	121.29	-29.94	1.53	-0.52	24.32
3,300.00	3.34	80.27	3,296.20	38.74	122.71	-30.13	0.85	0.00	14.60
3,325.00	3.41	80.05	3,321.15	38.99	124.16	-30.28	0.28	0.28	-0.88
3,350.00	3.44	78.69	3,346.11	39.27	125.63	-30.45	0.35	0.12	-5.44
3,375.00	3.42	79.69	3,371.06	39.55	127.10	-30.63	0.25	-0.08	4.00
3,400.00	3.33	79.06	3,396.02	39.82	128.55	-30.80	0.39	-0.36	-2.52
3,425.00	3.13	76.76	3,420.98	40.11	129.92	-31.00	0.95	-0.80	-9.20
3,450.00	2.93	72.96	3,445.95	40.46	131.20	-31.25	1.13	-0.80	-15.20
3,475.00	3.02	74.30	3,470.91	40.82	132.44	-31.53	0.45	0.36	5.36
3,500.00	2.99	73.13	3,495.88	41.19	133.70	-31.81	0.27	-0.12	-4.68
3,525.00	3.08	72.21	3,520.84	41.58	134.97	-32.11	0.41	0.36	-3.68
3,550.00	2.99	72.90	3,545.81	41.98	136.23	-32.42	0.39	-0.36	2.76



Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,575.00	3.04	72.27	3,570.77	42.37	137.48	-32.73	0.24	0.20	-2.52
3,600.00	3.14	74.17	3,595.74	42.76	138.77	-33.03	0.57	0.40	7.60
3,625.00	3.40	73.48	3,620.70	43.16	140.14	-33.33	1.05	1.04	-2.76
3,650.00	3.66	75.00	3,645.65	43.58	141.62	-33.64	1.11	1.04	6.08
3,675.00	3.69	76.21	3,670.60	43.98	143.18	-33.93	0.33	0.12	4.84
3,700.00	3.71	75.03	3,695.54	44.38	144.74	-34.22	0.31	0.08	-4.72
3,725.00	3.88	74.48	3,720.49	44.81	146.34	-34.55	0.70	0.68	-2.20
3,750.00	3.93	74.96	3,745.43	45.26	147.98	-34.88	0.24	0.20	1.92
3,775.00	3.71	75.39	3,770.38	45.69	149.59	-35.19	0.89	-0.88	1.72
3,800.00	3.20	75.15	3,795.33	46.07	151.05	-35.47	2.04	-2.04	-0.96
3,825.00	1.98	67.33	3,820.30	46.41	152.12	-35.74	5.07	-4.88	-31.28
3,850.00	1.48	69.68	3,845.29	46.69	152.82	-35.97	2.02	-2.00	9.40
3,875.00	1.18	74.19	3,870.29	46.87	153.37	-36.12	1.27	-1.20	18.04
3,900.00	1.14	82.69	3,895.28	46.98	153.86	-36.18	0.71	-0.16	34.00
3,925.00	1.15	85.26	3,920.28	47.03	154.36	-36.20	0.21	0.04	10.28
3,950.00	1.16	95.67	3,945.27	47.02	154.86	-36.16	0.84	0.04	41.64
3,975.00	1.26	100.24	3,970.27	46.95	155.38	-36.05	0.56	0.40	18.28
4,000.00	1.40	108.14	3,995.26	46.81	155.95	-35.87	0.92	0.56	31.60
4,025.00	1.42	114.66	4,020.25	46.58	156.52	-35.61	0.65	0.08	26.08
4,050.00	1.60	115.80	4,045.24	46.30	157.11	-35.28	0.73	0.72	4.56
4,075.00	1.80	113.41	4,070.23	45.99	157.79	-34.93	0.85	0.80	-9.56
4,100.00	2.16	101.85	4,095.22	45.74	158.61	-34.62	2.14	1.44	-46.24
4,125.00	2.63	96.88	4,120.19	45.58	159.64	-34.39	2.05	1.88	-19.88
4,150.00	3.04	92.90	4,145.16	45.47	160.87	-34.20	1.82	1.64	-15.92
4,175.00	3.61	88.95	4,170.12	45.45	162.32	-34.08	2.46	2.28	-15.80
4,200.00	3.95	84.91	4,195.07	45.54	163.96	-34.05	1.73	1.36	-16.16
4,225.00	4.13	83.62	4,220.01	45.72	165.72	-34.11	0.81	0.72	-5.16
4,250.00	4.19	81.27	4,244.94	45.96	167.51	-34.22	0.72	0.24	-9.40
4,275.00	4.20	78.32	4,269.87	46.28	169.31	-34.42	0.86	0.04	-11.80
4,300.00	4.17	70.95	4,294.81	46.77	171.07	-34.78	2.15	-0.12	-29.48
4,325.00	4.14	66.35	4,319.74	47.42	172.76	-35.32	1.34	-0.12	-18.40
4,350.00	3.95	62.52	4,344.68	48.18	174.35	-35.97	1.32	-0.76	-15.32
4,375.00	3.76	57.59	4,369.62	49.02	175.80	-36.70	1.53	-0.76	-19.72
4,400.00	3.82	52.81	4,394.57	49.96	177.16	-37.55	1.29	0.24	-19.12
4,425.00	3.52	51.16	4,419.52	50.95	178.42	-38.44	1.27	-1.20	-6.60
4,450.00	3.38	51.05	4,444.47	51.89	179.59	-39.30	0.56	-0.56	-0.44
4,475.00	3.10	50.80	4,469.43	52.78	180.69	-40.11	1.12	-1.12	-1.00
4,500.00	2.94	53.23	4,494.40	53.59	181.72	-40.85	0.82	-0.64	9.72
4,525.00	2.88	53.85	4,519.36	54.35	182.74	-41.53	0.27	-0.24	2.48
4,550.00	2.75	55.44	4,544.33	55.06	183.75	-42.17	0.61	-0.52	6.36
4,575.00	2.64	57.90	4,569.31	55.71	184.73	-42.75	0.64	-0.44	9.84
4,600.00	2.54	65.62	4,594.28	56.24	185.72	-43.21	1.45	-0.40	30.88
4,625.00	2.51	69.73	4,619.26	56.66	186.74	-43.56	0.73	-0.12	16.44



Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandrift Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandrift Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,650.00	2.56	71.12	4,644.23	57.03	187.78	-43.86	0.32	0.20	5.56
4,675.00	2.60	72.22	4,669.21	57.38	188.85	-44.14	0.25	0.16	4.40
4,700.00	2.61	72.05	4,694.18	57.73	189.93	-44.41	0.05	0.04	-0.68
4,725.00	2.62	75.83	4,719.15	58.05	191.02	-44.65	0.69	0.04	15.12
4,750.00	2.67	76.46	4,744.13	58.32	192.14	-44.85	0.23	0.20	2.52
4,775.00	2.71	75.89	4,769.10	58.60	193.28	-45.05	0.19	0.16	-2.28
4,800.00	2.73	74.97	4,794.07	58.90	194.43	-45.26	0.19	0.08	-3.68
4,825.00	2.94	74.92	4,819.04	59.22	195.63	-45.50	0.84	0.84	-0.20
4,850.00	2.93	76.52	4,844.01	59.54	196.87	-45.73	0.33	-0.04	6.40
4,875.00	2.95	76.45	4,868.98	59.84	198.11	-45.94	0.08	0.08	-0.28
4,900.00	2.99	75.51	4,893.94	60.15	199.37	-46.17	0.25	0.16	-3.76
4,925.00	3.00	73.93	4,918.91	60.50	200.63	-46.42	0.33	0.04	-6.32
4,950.00	3.06	72.85	4,943.87	60.87	201.90	-46.71	0.33	0.24	-4.32
4,975.00	3.11	76.25	4,968.84	61.23	203.19	-46.98	0.76	0.20	13.60
5,000.00	3.07	76.90	4,993.80	61.54	204.50	-47.20	0.21	-0.16	2.60
5,025.00	3.18	75.40	5,018.76	61.87	205.83	-47.44	0.55	0.44	-6.00
5,050.00	3.35	74.85	5,043.72	62.24	207.20	-47.71	0.69	0.68	-2.20
5,075.00	3.32	75.39	5,068.68	62.61	208.61	-47.98	0.17	-0.12	2.16
5,100.00	3.37	76.81	5,093.64	62.96	210.02	-48.23	0.39	0.20	5.68
5,125.00	3.41	76.56	5,118.59	63.30	211.46	-48.47	0.17	0.16	-1.00
5,150.00	3.56	76.04	5,143.55	63.66	212.94	-48.73	0.61	0.60	-2.08
5,175.00	3.54	74.67	5,168.50	64.05	214.44	-49.01	0.35	-0.08	-5.48
5,200.00	3.50	74.68	5,193.45	64.46	215.92	-49.32	0.16	-0.16	0.04
5,225.00	3.46	75.06	5,218.41	64.85	217.38	-49.61	0.18	-0.16	1.52
5,250.00	3.57	75.69	5,243.36	65.24	218.86	-49.89	0.47	0.44	2.52
5,275.00	3.57	74.04	5,268.31	65.65	220.37	-50.19	0.41	0.00	-6.60
5,300.00	3.56	75.21	5,293.26	66.06	221.87	-50.50	0.29	-0.04	4.68
5,325.00	3.54	73.46	5,318.22	66.48	223.36	-50.81	0.44	-0.08	-7.00
5,350.00	3.56	74.99	5,343.17	66.90	224.85	-51.13	0.39	0.08	6.12
5,375.00	3.59	73.35	5,368.12	67.32	226.35	-51.45	0.43	0.12	-6.56
5,400.00	3.46	74.51	5,393.07	67.75	227.82	-51.77	0.59	-0.52	4.64
5,425.00	3.49	74.64	5,418.03	68.15	229.28	-52.07	0.12	0.12	0.52
5,450.00	3.49	74.98	5,442.98	68.55	230.75	-52.37	0.08	0.00	1.36
5,475.00	3.47	73.73	5,467.93	68.96	232.21	-52.68	0.31	-0.08	-5.00
5,500.00	3.49	74.74	5,492.89	69.37	233.67	-52.99	0.26	0.08	4.04
5,525.00	3.49	72.07	5,517.84	69.81	235.13	-53.32	0.65	0.00	-10.68
5,550.00	3.53	71.74	5,542.79	70.28	236.59	-53.69	0.18	0.16	-1.32
5,575.00	3.59	71.69	5,567.75	70.77	238.06	-54.08	0.24	0.24	-0.20
5,600.00	3.60	70.55	5,592.70	71.28	239.54	-54.48	0.29	0.04	-4.56
5,625.00	3.72	70.10	5,617.64	71.81	241.05	-54.91	0.49	0.48	-1.80
5,650.00	3.81	66.82	5,642.59	72.42	242.57	-55.41	0.93	0.36	-13.12
5,675.00	3.80	65.47	5,667.54	73.09	244.09	-55.97	0.36	-0.04	-5.40
5,700.00	3.84	65.39	5,692.48	73.78	245.60	-56.56	0.16	0.16	-0.32



Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,725.00	3.79	66.88	5,717.42	74.45	247.13	-57.12	0.44	-0.20	5.96
5,750.00	3.87	66.20	5,742.37	75.12	248.66	-57.68	0.37	0.32	-2.72
5,775.00	3.86	66.85	5,767.31	75.79	250.20	-58.24	0.18	-0.04	2.60
5,800.00	3.84	66.10	5,792.26	76.46	251.74	-58.80	0.22	-0.08	-3.00
5,825.00	3.84	64.59	5,817.20	77.16	253.26	-59.39	0.40	0.00	-6.04
5,850.00	3.74	64.43	5,842.15	77.87	254.75	-60.00	0.40	-0.40	-0.64
5,875.00	3.72	65.07	5,867.09	78.56	256.23	-60.59	0.18	-0.08	2.56
5,900.00	3.69	64.89	5,892.04	79.25	257.69	-61.17	0.13	-0.12	-0.72
5,925.00	3.55	63.42	5,916.99	79.93	259.11	-61.76	0.67	-0.56	-5.88
5,950.00	3.40	64.06	5,941.94	80.60	260.47	-62.33	0.62	-0.60	2.56
5,975.00	3.47	64.73	5,966.90	81.25	261.82	-62.88	0.32	0.28	2.68
6,000.00	3.53	66.66	5,991.85	81.88	263.21	-63.41	0.53	0.24	7.72
6,025.00	3.55	66.42	6,016.80	82.49	264.63	-63.93	0.10	0.08	-0.96
6,050.00	3.59	65.47	6,041.76	83.13	266.05	-64.46	0.29	0.16	-3.80
6,075.00	3.56	64.64	6,066.71	83.79	267.46	-65.02	0.24	-0.12	-3.32
6,100.00	3.53	66.84	6,091.66	84.42	268.87	-65.56	0.56	-0.12	8.80
6,125.00	3.57	65.30	6,116.61	85.05	270.29	-66.08	0.41	0.16	-6.16
6,150.00	3.53	66.20	6,141.56	85.69	271.70	-66.62	0.27	-0.16	3.60
6,175.00	3.45	67.43	6,166.52	86.28	273.10	-67.12	0.44	-0.32	4.92
6,200.00	3.53	65.25	6,191.47	86.90	274.49	-67.63	0.62	0.32	-8.72
6,225.00	3.54	65.50	6,216.42	87.54	275.89	-68.18	0.07	0.04	1.00
6,250.00	3.55	64.63	6,241.38	88.19	277.29	-68.73	0.22	0.04	-3.48
6,275.00	3.57	65.42	6,266.33	88.84	278.70	-69.29	0.21	0.08	3.16
6,300.00	3.54	65.86	6,291.28	89.48	280.11	-69.83	0.16	-0.12	1.76
6,325.00	3.54	64.74	6,316.23	90.13	281.51	-70.37	0.28	0.00	-4.48
6,350.00	3.57	64.49	6,341.18	90.79	282.91	-70.94	0.14	0.12	-1.00
6,375.00	3.64	64.83	6,366.13	91.47	284.33	-71.51	0.29	0.28	1.36
6,400.00	3.68	65.20	6,391.08	92.14	285.78	-72.08	0.19	0.16	1.48
6,425.00	3.67	64.22	6,416.03	92.83	287.23	-72.67	0.25	-0.04	-3.92
6,450.00	3.63	65.37	6,440.98	93.50	288.67	-73.24	0.33	-0.16	4.60
6,475.00	3.56	66.20	6,465.93	94.15	290.10	-73.78	0.35	-0.28	3.32
6,500.00	3.74	64.37	6,490.88	94.81	291.55	-74.35	0.86	0.72	-7.32
6,525.00	3.70	64.04	6,515.83	95.52	293.01	-74.95	0.18	-0.16	-1.32
6,550.00	3.69	63.32	6,540.78	96.23	294.45	-75.56	0.19	-0.04	-2.88
6,575.00	3.70	65.55	6,565.72	96.93	295.90	-76.16	0.58	0.04	8.92
6,600.00	3.72	64.37	6,590.67	97.61	297.37	-76.74	0.32	0.08	-4.72
6,625.00	3.75	66.41	6,615.62	98.29	298.85	-77.31	0.54	0.12	8.16
6,650.00	3.75	63.25	6,640.57	98.98	300.33	-77.90	0.83	0.00	-12.64
6,675.00	3.67	63.25	6,665.51	99.71	301.77	-78.53	0.32	-0.32	0.00
6,700.00	3.76	62.17	6,690.46	100.46	303.21	-79.17	0.46	0.36	-4.32
6,725.00	3.77	54.36	6,715.41	101.32	304.60	-79.93	2.05	0.04	-31.24
6,750.00	3.77	48.87	6,740.35	102.34	305.89	-80.86	1.44	0.00	-21.96
6,775.00	3.94	47.66	6,765.30	103.46	307.15	-81.89	0.75	0.68	-4.84
6,800.00	3.91	46.44	6,790.24	104.62	308.40	-82.96	0.35	-0.12	-4.88

Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandriil Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandriil Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,825.00	3.85	45.02	6,815.18	105.80	309.61	-84.06	0.45	-0.24	-5.68
6,850.00	3.94	45.18	6,840.12	107.00	310.81	-85.17	0.36	0.36	0.64
6,875.00	3.83	46.62	6,865.07	108.18	312.03	-86.26	0.59	-0.44	5.76
6,900.00	3.84	46.55	6,890.01	109.33	313.24	-87.32	0.04	0.04	-0.28
6,925.00	3.85	46.09	6,914.95	110.49	314.46	-88.40	0.13	0.04	-1.84
6,950.00	3.98	46.06	6,939.89	111.67	315.68	-89.49	0.52	0.52	-0.12
6,975.00	3.91	45.24	6,964.84	112.87	316.91	-90.61	0.36	-0.28	-3.28
7,000.00	3.88	46.14	6,989.78	114.06	318.13	-91.70	0.27	-0.12	3.60
7,025.00	3.91	44.30	7,014.72	115.26	319.34	-92.81	0.51	0.12	-7.36
7,050.00	3.86	45.19	7,039.66	116.46	320.53	-93.93	0.31	-0.20	3.56
7,075.00	3.99	44.16	7,064.60	117.68	321.73	-95.06	0.59	0.52	-4.12
7,100.00	4.48	44.44	7,089.54	119.00	323.02	-96.29	1.96	1.96	1.12
7,125.00	5.15	46.36	7,114.45	120.47	324.52	-97.65	2.76	2.68	7.68
7,150.00	5.47	48.07	7,139.34	122.04	326.21	-99.10	1.43	1.28	6.84
7,175.00	5.48	48.31	7,164.23	123.63	327.99	-100.57	0.10	0.04	0.96
7,200.00	5.51	48.18	7,189.11	125.22	329.78	-102.03	0.13	0.12	-0.52
7,225.00	5.69	47.75	7,213.99	126.86	331.59	-103.54	0.74	0.72	-1.72
7,250.00	5.69	47.69	7,238.87	128.52	333.42	-105.07	0.02	0.00	-0.24
7,275.00	5.61	47.49	7,263.75	130.18	335.24	-106.60	0.33	-0.32	-0.80
7,300.00	5.60	48.65	7,288.63	131.82	337.06	-108.10	0.45	-0.04	4.64
7,325.00	5.56	47.87	7,313.51	133.43	338.87	-109.59	0.34	-0.16	-3.12
7,350.00	5.66	48.26	7,338.39	135.07	340.69	-111.10	0.43	0.40	1.56
7,375.00	5.56	48.03	7,363.27	136.70	342.51	-112.60	0.41	-0.40	-0.92
7,400.00	5.62	48.68	7,388.15	138.32	344.33	-114.08	0.35	0.24	2.60
7,425.00	5.34	48.02	7,413.04	139.90	346.11	-115.54	1.15	-1.12	-2.64
7,450.00	5.34	46.22	7,437.93	141.49	347.82	-117.00	0.67	0.00	-7.20
7,475.00	5.23	46.70	7,462.82	143.07	349.49	-118.47	0.47	-0.44	1.92
7,500.00	5.10	46.60	7,487.72	144.62	351.12	-119.90	0.52	-0.52	-0.40
7,525.00	5.10	47.04	7,512.62	146.14	352.74	-121.30	0.16	0.00	1.76
7,550.00	5.11	47.10	7,537.52	147.65	354.37	-122.70	0.05	0.04	0.24
7,575.00	4.98	46.65	7,562.42	149.16	355.98	-124.09	0.54	-0.52	-1.80
7,600.00	4.92	47.33	7,587.33	150.63	357.56	-125.45	0.34	-0.24	2.72
7,625.00	5.03	47.08	7,612.24	152.10	359.15	-126.81	0.45	0.44	-1.00
7,650.00	5.14	47.21	7,637.14	153.61	360.77	-128.20	0.44	0.44	0.52
7,675.00	5.98	47.16	7,662.02	155.25	362.55	-129.72	3.36	3.36	-0.20
7,700.00	6.24	46.87	7,686.88	157.07	364.49	-131.39	1.05	1.04	-1.16
7,725.00	6.28	48.53	7,711.73	158.90	366.51	-133.08	0.74	0.16	6.64
7,750.00	6.26	48.61	7,736.58	160.71	368.56	-134.74	0.09	-0.08	0.32
7,775.00	6.32	49.13	7,761.43	162.51	370.62	-136.39	0.33	0.24	2.08
7,800.00	6.21	50.28	7,786.28	164.27	372.70	-138.01	0.67	-0.44	4.60
7,825.00	6.22	50.92	7,811.13	165.99	374.79	-139.58	0.28	0.04	2.56
7,850.00	6.17	51.10	7,835.99	167.69	376.89	-141.13	0.21	-0.20	0.72
7,875.00	6.13	51.71	7,860.84	169.36	378.98	-142.65	0.31	-0.16	2.44



Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandriil Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandriil Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,900.00	6.10	51.17	7,885.70	171.02	381.06	-144.16	0.26	-0.12	-2.16
7,925.00	6.05	51.97	7,910.56	172.67	383.14	-145.66	0.39	-0.20	3.20
7,950.00	6.07	51.45	7,935.42	174.30	385.21	-147.14	0.23	0.08	-2.08
7,975.00	5.82	50.70	7,960.29	175.93	387.22	-148.63	1.05	-1.00	-3.00
8,000.00	5.78	49.91	7,985.16	177.54	389.17	-150.10	0.36	-0.16	-3.16
8,025.00	5.68	48.18	8,010.03	179.18	391.05	-151.60	0.80	-0.40	-6.92
8,050.00	5.79	49.44	8,034.91	180.82	392.93	-153.11	0.67	0.44	5.04
8,075.00	5.79	50.09	8,059.78	182.45	394.86	-154.60	0.26	0.00	2.60
8,100.00	5.84	49.52	8,084.65	184.09	396.79	-156.10	0.31	0.20	-2.28
8,125.00	5.79	49.64	8,109.52	185.73	398.72	-157.61	0.21	-0.20	0.48
8,150.00	5.58	52.17	8,134.40	187.29	400.64	-159.03	1.31	-0.84	10.12
8,175.00	5.71	51.90	8,159.28	188.80	402.58	-160.41	0.53	0.52	-1.08
8,200.00	5.75	51.84	8,184.16	190.34	404.54	-161.81	0.16	0.16	-0.24
8,225.00	5.73	53.39	8,209.03	191.86	406.53	-163.18	0.63	-0.08	6.20
8,250.00	5.79	59.49	8,233.90	193.25	408.62	-164.42	2.46	0.24	24.40
8,275.00	5.97	62.01	8,258.77	194.50	410.85	-165.51	1.26	0.72	10.08
8,300.00	5.92	62.15	8,283.64	195.71	413.14	-166.56	0.21	-0.20	0.56
8,325.00	5.97	62.52	8,308.50	196.91	415.43	-167.60	0.25	0.20	1.48
8,350.00	5.98	62.31	8,333.37	198.12	417.74	-168.64	0.10	0.04	-0.84
8,375.00	5.68	62.92	8,358.24	199.28	420.00	-169.65	1.23	-1.20	2.44
8,400.00	5.76	64.12	8,383.11	200.40	422.23	-170.61	0.58	0.32	4.80
8,425.00	5.64	63.24	8,407.99	201.50	424.45	-171.55	0.59	-0.48	-3.52
8,450.00	5.48	63.18	8,432.87	202.59	426.61	-172.49	0.64	-0.64	-0.24
8,475.00	5.64	63.13	8,457.76	203.68	428.77	-173.43	0.64	0.64	-0.20
8,500.00	5.76	61.59	8,482.63	204.83	430.97	-174.43	0.78	0.48	-6.16
8,525.00	6.19	57.74	8,507.50	206.15	433.22	-175.58	2.35	1.72	-15.40
8,550.00	6.50	55.23	8,532.34	207.68	435.52	-176.95	1.66	1.24	-10.04
8,575.00	6.54	55.57	8,557.18	209.29	437.86	-178.39	0.22	0.16	1.36
8,600.00	6.52	54.32	8,582.02	210.92	440.18	-179.86	0.57	-0.08	-5.00
8,625.00	6.35	54.56	8,606.86	212.55	442.46	-181.33	0.69	-0.68	0.96
8,650.00	6.13	53.74	8,631.71	214.14	444.67	-182.76	0.95	-0.88	-3.28
8,675.00	5.82	55.67	8,656.58	215.65	446.79	-184.12	1.48	-1.24	7.72
8,700.00	5.80	54.34	8,681.45	217.10	448.86	-185.42	0.54	-0.08	-5.32
8,725.00	5.63	54.89	8,706.32	218.54	450.89	-186.72	0.71	-0.68	2.20
8,750.00	5.46	54.82	8,731.21	219.93	452.87	-187.97	0.68	-0.68	-0.28
8,775.00	5.72	54.64	8,756.09	221.34	454.85	-189.23	1.04	1.04	-0.72
8,800.00	6.28	53.28	8,780.95	222.87	456.97	-190.62	2.31	2.24	-5.44
8,825.00	7.03	51.22	8,805.78	224.65	459.25	-192.23	3.15	3.00	-8.24
8,850.00	7.09	51.90	8,830.59	226.56	461.66	-193.97	0.41	0.24	2.72
8,875.00	7.12	51.79	8,855.40	228.47	464.09	-195.71	0.13	0.12	-0.44
8,900.00	6.87	51.89	8,880.22	230.35	466.49	-197.42	1.00	-1.00	0.40
8,925.00	6.59	51.96	8,905.04	232.16	468.79	-199.06	1.12	-1.12	0.28
8,950.00	6.36	51.31	8,929.88	233.91	471.00	-200.65	0.97	-0.92	-2.60



Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandriil Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandriil Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,975.00	6.14	52.51	8,954.74	235.59	473.15	-202.18	1.02	-0.88	4.80
9,000.00	5.84	52.64	8,979.60	237.17	475.22	-203.62	1.20	-1.20	0.52
9,025.00	5.46	53.11	9,004.48	238.66	477.18	-204.96	1.53	-1.52	1.88
9,050.00	5.24	54.19	9,029.37	240.04	479.06	-206.21	0.97	-0.88	4.32
9,075.00	5.16	54.84	9,054.27	241.36	480.90	-207.40	0.40	-0.32	2.60
9,100.00	5.12	53.37	9,079.16	242.67	482.72	-208.58	0.55	-0.16	-5.88
9,125.00	5.22	51.48	9,104.06	244.04	484.50	-209.83	0.79	0.40	-7.56
9,150.00	5.15	51.30	9,128.96	245.45	486.27	-211.11	0.29	-0.28	-0.72
9,175.00	5.51	50.60	9,153.85	246.92	488.07	-212.45	1.46	1.44	-2.80
9,200.00	6.17	50.32	9,178.72	248.54	490.03	-213.92	2.64	2.64	-1.12
9,225.00	6.50	49.40	9,203.57	250.31	492.14	-215.55	1.38	1.32	-3.68
9,250.00	6.46	47.38	9,228.41	252.19	494.25	-217.27	0.93	-0.16	-8.08
9,275.00	6.14	47.49	9,253.26	254.04	496.27	-218.99	1.28	-1.28	0.44
9,300.00	5.79	46.75	9,278.12	255.81	498.17	-220.62	1.43	-1.40	-2.96
9,325.00	5.82	46.85	9,303.00	257.54	500.02	-222.22	0.13	0.12	0.40
9,350.00	6.10	48.40	9,327.86	259.29	501.93	-223.83	1.29	1.12	6.20
9,375.00	6.56	53.58	9,352.71	261.02	504.08	-225.40	2.93	1.84	20.72
9,400.00	7.07	57.80	9,377.53	262.69	506.53	-226.90	2.86	2.04	16.88
9,425.00	7.29	59.31	9,402.34	264.32	509.19	-228.34	1.16	0.88	6.04
9,450.00	7.11	59.87	9,427.14	265.90	511.90	-229.73	0.77	-0.72	2.24
9,475.00	6.76	61.60	9,451.96	267.38	514.53	-231.02	1.63	-1.40	6.92
9,500.00	6.55	62.10	9,476.79	268.75	517.08	-232.21	0.87	-0.84	2.00
9,525.00	6.22	63.18	9,501.63	270.03	519.55	-233.31	1.40	-1.32	4.32
9,550.00	6.04	64.17	9,526.49	271.21	521.94	-234.33	0.83	-0.72	3.96
9,575.00	5.97	66.59	9,551.35	272.30	524.32	-235.25	1.05	-0.28	9.68
9,600.00	5.73	68.59	9,576.22	273.27	526.68	-236.06	1.26	-0.96	8.00
9,625.00	5.72	70.89	9,601.10	274.13	529.02	-236.76	0.92	-0.04	9.20
9,650.00	6.29	75.96	9,625.96	274.87	531.52	-237.32	3.11	2.28	20.28
9,670.00	6.68	81.15	9,645.83	275.32	533.73	-237.61	3.52	1.95	25.95
9,750.00	6.28	79.49	9,725.32	276.83	542.63	-238.50	0.55	-0.50	-2.08
First MWD Survey @ 9750' MD									
9,775.00	5.88	79.14	9,750.18	277.32	545.24	-238.81	1.61	-1.60	-1.40
9,838.00	4.30	106.87	9,812.94	277.25	550.67	-238.36	4.57	-2.51	44.02
9,870.00	6.46	153.34	9,844.81	275.29	552.62	-236.27	14.63	6.75	145.22
9,901.00	10.33	165.73	9,875.47	271.03	554.09	-231.92	13.71	12.48	39.97
9,932.00	14.03	168.92	9,905.77	264.65	555.50	-225.46	12.13	11.94	10.29
9,979.00	20.01	170.12	9,950.69	251.13	557.98	-211.79	12.74	12.72	2.55
10,026.00	26.04	173.52	9,993.93	232.94	560.52	-193.47	13.13	12.83	7.23
10,073.00	31.37	176.48	10,035.14	210.46	562.44	-170.91	11.73	11.34	6.30
10,119.00	36.01	176.27	10,073.41	185.00	564.05	-145.40	10.09	10.09	-0.46
10,166.00	39.68	175.07	10,110.51	156.25	566.24	-116.57	7.96	7.81	-2.55
10,213.00	45.71	174.75	10,145.04	124.52	569.07	-84.73	12.84	12.83	-0.68
10,260.00	51.06	175.23	10,176.25	89.53	572.14	-49.61	11.41	11.38	1.02
10,307.00	54.50	172.66	10,204.67	52.33	576.10	-12.21	8.52	7.32	-5.47



Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,335.87	58.12	171.60	10,220.68	28.54	579.39	11.75	12.91	12.54	-3.66
FTP (330 FNL) @ 10335.87'MD									
10,349.75	59.87	171.12	10,227.84	16.77	581.18	23.61	12.91	12.57	-3.45
Tigercat Fed Com 1H FTP									
10,354.00	60.40	170.98	10,229.95	13.13	581.76	27.28	12.91	12.57	-3.37
10,401.00	66.41	172.85	10,250.98	-28.46	587.64	69.17	13.27	12.79	3.98
10,495.00	78.05	180.19	10,279.66	-117.59	592.88	158.46	14.44	12.38	7.81
10,522.00	82.34	181.55	10,284.26	-144.19	592.47	184.96	16.65	15.89	5.04
10,584.00	83.81	180.25	10,291.73	-205.72	591.51	246.28	3.15	2.37	-2.10
10,615.00	85.42	179.41	10,294.64	-236.59	591.60	277.08	5.85	5.19	-2.71
10,708.00	89.12	179.01	10,299.07	-329.45	592.88	369.81	4.00	3.98	-0.43
10,801.00	89.87	179.22	10,299.89	-422.44	594.32	462.67	0.84	0.81	0.23
10,894.00	87.91	178.16	10,301.69	-515.39	596.44	555.55	2.40	-2.11	-1.14
10,988.00	89.51	179.16	10,303.81	-609.34	598.64	649.42	2.01	1.70	1.06
11,081.00	89.01	179.08	10,305.01	-702.32	600.07	742.27	0.54	-0.54	-0.09
11,175.00	89.23	179.19	10,306.45	-796.30	601.49	836.12	0.26	0.23	0.12
11,269.00	89.76	177.96	10,307.28	-890.26	603.82	930.03	1.42	0.56	-1.31
11,338.14	89.70	177.96	10,307.61	-959.36	606.28	999.13	0.09	-0.09	0.00
Tigercat Fed Com 1H T @ 1000'VS									
11,362.00	89.68	177.96	10,307.73	-983.20	607.13	1,022.97	0.09	-0.09	0.00
11,455.00	89.37	178.16	10,308.51	-1,076.15	610.28	1,115.91	0.40	-0.33	0.22
11,549.00	89.99	178.88	10,309.03	-1,170.11	612.71	1,209.82	1.01	0.66	0.77
11,643.00	90.01	179.07	10,309.03	-1,264.10	614.39	1,303.69	0.20	0.02	0.20
11,737.00	88.56	178.49	10,310.20	-1,358.07	616.39	1,397.57	1.66	-1.54	-0.62
11,831.00	90.07	178.93	10,311.33	-1,452.03	618.51	1,491.46	1.67	1.61	0.47
11,924.00	92.51	180.19	10,309.23	-1,545.00	619.22	1,584.25	2.95	2.62	1.35
12,018.00	90.27	178.88	10,306.95	-1,638.96	619.99	1,678.04	2.76	-2.38	-1.39
12,112.00	89.79	179.07	10,306.90	-1,732.94	621.67	1,771.91	0.55	-0.51	0.20
12,205.00	89.57	179.16	10,307.42	-1,825.93	623.10	1,864.77	0.26	-0.24	0.10
12,299.00	90.01	179.26	10,307.77	-1,919.92	624.40	1,958.63	0.48	0.47	0.11
12,339.63	89.99	179.34	10,307.77	-1,960.55	624.90	1,999.19	0.20	-0.05	0.19
Tigercat Fed Com 1H T @ 2000'VS									
12,392.00	89.96	179.44	10,307.79	-2,012.91	625.45	2,051.47	0.20	-0.05	0.19
12,486.00	90.32	179.99	10,307.56	-2,106.91	625.92	2,145.27	0.70	0.38	0.59
12,579.00	88.22	179.02	10,308.75	-2,199.89	626.73	2,238.09	2.49	-2.26	-1.04
12,674.00	88.53	179.77	10,311.44	-2,294.85	627.73	2,332.88	0.85	0.33	0.79
12,767.00	88.89	180.28	10,313.54	-2,387.83	627.69	2,425.63	0.67	0.39	0.55
12,861.00	90.18	178.95	10,314.30	-2,481.82	628.32	2,519.44	1.97	1.37	-1.41
12,955.00	89.82	178.44	10,314.30	-2,575.79	630.46	2,613.34	0.66	-0.38	-0.54
13,049.00	87.01	177.70	10,316.90	-2,669.69	633.62	2,707.23	3.09	-2.99	-0.79
13,143.00	88.16	178.01	10,320.86	-2,763.54	637.14	2,801.10	1.27	1.22	0.33
13,236.00	88.36	178.72	10,323.68	-2,856.46	639.79	2,893.98	0.79	0.22	0.76
13,330.00	88.98	178.94	10,325.86	-2,950.41	641.71	2,987.84	0.70	0.66	0.23
13,424.00	87.04	179.00	10,329.13	-3,044.34	643.40	3,081.65	2.06	-2.06	0.06



Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,518.00	87.88	179.44	10,333.29	-3,138.24	644.68	3,175.41	1.01	0.89	0.47
13,611.00	90.10	180.35	10,334.93	-3,231.22	644.85	3,268.18	2.58	2.39	0.98
13,705.00	90.32	180.61	10,334.59	-3,325.21	644.06	3,361.89	0.36	0.23	0.28
13,798.00	90.43	180.62	10,333.98	-3,418.20	643.06	3,454.59	0.12	0.12	0.01
13,892.00	91.39	180.97	10,332.49	-3,512.18	641.76	3,548.25	1.09	1.02	0.37
13,986.00	91.61	181.27	10,330.03	-3,606.13	639.92	3,641.85	0.40	0.23	0.32
14,079.00	91.11	179.96	10,327.82	-3,699.10	638.92	3,734.52	1.51	-0.54	-1.41
14,172.00	91.75	179.92	10,325.50	-3,792.07	639.02	3,827.28	0.69	0.69	-0.04
14,267.00	89.87	179.32	10,324.16	-3,887.05	639.65	3,922.07	2.08	-1.98	-0.63
14,344.34	89.75	179.34	10,324.41	-3,964.39	640.55	3,999.28	0.15	-0.15	0.03
Tigercat Fed Com 1H T @ 4000'VS									
14,360.00	89.73	179.35	10,324.48	-3,980.04	640.73	4,014.92	0.15	-0.15	0.03
14,454.00	89.79	178.70	10,324.87	-4,074.03	642.33	4,108.79	0.69	0.06	-0.69
14,547.00	89.57	179.65	10,325.39	-4,167.02	643.67	4,201.64	1.05	-0.24	1.02
14,640.00	89.65	178.94	10,326.03	-4,260.01	644.81	4,294.49	0.77	0.09	-0.76
14,735.00	89.45	178.68	10,326.77	-4,354.98	646.79	4,389.37	0.35	-0.21	-0.27
14,828.00	89.26	178.74	10,327.82	-4,447.95	648.88	4,482.26	0.21	-0.20	0.06
14,921.00	89.34	179.27	10,328.96	-4,540.93	650.49	4,575.13	0.58	0.09	0.57
15,015.00	89.54	179.80	10,329.87	-4,634.93	651.26	4,668.95	0.60	0.21	0.56
15,109.00	88.61	180.69	10,331.39	-4,728.91	650.85	4,762.68	1.37	-0.99	0.95
15,202.00	88.11	180.47	10,334.05	-4,821.87	649.91	4,855.35	0.59	-0.54	-0.24
15,296.00	90.43	180.00	10,335.25	-4,915.85	649.53	4,949.08	2.52	2.47	-0.50
15,390.00	89.34	179.12	10,335.44	-5,009.85	650.25	5,042.90	1.49	-1.16	-0.94
15,484.00	89.23	178.86	10,336.61	-5,103.82	651.91	5,136.76	0.30	-0.12	-0.28
15,577.00	90.24	178.94	10,337.04	-5,196.81	653.69	5,229.64	1.09	1.09	0.09
15,670.00	90.27	178.31	10,336.63	-5,289.78	655.92	5,322.55	0.68	0.03	-0.68
15,764.00	90.97	178.86	10,335.61	-5,383.74	658.24	5,416.45	0.95	0.74	0.59
15,858.00	88.61	178.79	10,335.96	-5,477.72	660.17	5,510.33	2.51	-2.51	-0.07
15,951.00	88.95	179.01	10,337.94	-5,570.68	661.96	5,603.19	0.44	0.37	0.24
16,044.00	89.82	179.81	10,338.93	-5,663.66	662.91	5,696.02	1.27	0.94	0.86
16,138.00	89.57	180.27	10,339.43	-5,757.66	662.85	5,789.78	0.56	-0.27	0.49
16,232.00	89.82	180.33	10,339.94	-5,851.66	662.36	5,883.52	0.27	0.27	0.06
16,326.00	89.90	180.75	10,340.16	-5,945.66	661.47	5,977.23	0.45	0.09	0.45
16,420.00	89.40	181.24	10,340.74	-6,039.64	659.84	6,070.87	0.74	-0.53	0.52
16,513.00	88.70	180.60	10,342.28	-6,132.61	658.35	6,163.52	1.02	-0.75	-0.69
16,607.00	90.63	181.82	10,342.83	-6,226.58	656.36	6,257.12	2.43	2.05	1.30
16,700.00	90.21	181.53	10,342.15	-6,319.54	653.64	6,349.67	0.55	-0.45	-0.31
16,794.00	92.65	181.26	10,339.80	-6,413.48	651.35	6,443.22	2.61	2.60	-0.29
16,887.00	92.48	180.33	10,335.64	-6,506.37	650.07	6,535.80	1.02	-0.18	-1.00
16,980.00	89.03	179.50	10,334.42	-6,599.35	650.20	6,628.57	3.82	-3.71	-0.89
17,073.00	89.68	179.72	10,335.46	-6,692.34	650.84	6,721.38	0.74	0.70	0.24
17,167.00	88.25	178.21	10,337.16	-6,786.31	652.53	6,815.23	2.21	-1.52	-1.61
17,261.00	88.39	178.59	10,339.92	-6,880.23	655.16	6,909.11	0.43	0.15	0.40



Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandril Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,351.34	88.50	179.46	10,342.37	-6,970.52	656.69	6,999.29	0.97	0.12	0.97
Tigercat Fed Com 1H T @ 7000'VS									
17,354.00	88.50	179.49	10,342.44	-6,973.18	656.72	7,001.95	0.97	0.12	0.97
17,448.00	88.36	179.59	10,345.02	-7,067.14	657.47	7,095.73	0.18	-0.15	0.11
17,541.00	87.18	179.99	10,348.63	-7,160.07	657.81	7,188.46	1.34	-1.27	0.43
17,635.00	89.20	178.94	10,351.60	-7,254.01	658.69	7,282.24	2.42	2.15	-1.12
17,729.00	89.48	178.78	10,352.69	-7,347.99	660.56	7,376.12	0.34	0.30	-0.17
17,823.00	89.37	178.49	10,353.63	-7,441.96	662.80	7,470.01	0.33	-0.12	-0.31
17,853.04	89.13	178.19	10,354.02	-7,471.98	663.67	7,500.02	1.26	-0.79	-0.99
Tigercat Fed Com 1H T @ 7500'VS									
17,916.00	88.64	177.57	10,355.24	-7,534.89	665.99	7,562.94	1.26	-0.78	-0.99
18,011.00	89.40	178.44	10,356.87	-7,629.81	669.30	7,657.87	1.22	0.80	0.92
18,104.00	91.36	180.90	10,356.25	-7,722.80	669.84	7,750.66	3.38	2.11	2.65
18,198.00	90.04	180.79	10,355.10	-7,816.78	668.45	7,844.32	1.41	-1.40	-0.12
18,291.00	87.35	178.88	10,357.22	-7,909.74	668.72	7,937.08	3.55	-2.89	-2.05
18,353.72	87.11	179.00	10,360.25	-7,972.38	669.88	7,999.65	0.43	-0.38	0.19
Tigercat Fed Com 1H T @ 8000'VS									
18,385.00	86.99	179.06	10,361.86	-8,003.61	670.40	8,030.84	0.43	-0.38	0.19
18,478.00	87.66	179.88	10,366.20	-8,096.50	671.26	8,123.57	1.14	0.72	0.88
18,554.42	87.61	179.80	10,369.36	-8,172.86	671.48	8,199.76	0.13	-0.06	-0.11
Tigercat Fed Com 1H T @ 8200'VS									
18,571.00	87.60	179.78	10,370.05	-8,189.42	671.54	8,216.28	0.13	-0.06	-0.11
18,665.00	87.77	180.02	10,373.85	-8,283.35	671.70	8,309.99	0.31	0.18	0.26
18,758.00	87.91	180.40	10,377.35	-8,376.28	671.36	8,402.68	0.44	0.15	0.41
18,852.00	88.33	178.48	10,380.44	-8,470.22	672.28	8,496.46	2.09	0.45	-2.04
18,945.00	87.38	177.68	10,383.92	-8,563.10	675.39	8,589.33	1.34	-1.02	-0.86
19,038.00	86.96	177.18	10,388.51	-8,655.89	679.56	8,682.19	0.70	-0.45	-0.54
19,132.00	90.35	177.32	10,390.71	-8,749.75	684.07	8,776.12	3.61	3.61	0.15
19,225.00	91.02	177.87	10,389.60	-8,842.66	687.97	8,869.08	0.93	0.72	0.59
19,319.00	91.95	178.25	10,387.17	-8,936.57	691.15	8,962.99	1.07	0.99	0.40
19,356.41	91.26	178.53	10,386.12	-8,973.95	692.20	9,000.36	1.99	-1.84	0.75
Tigercat Fed Com 1H T @ 9000'VS									
19,412.00	90.24	178.95	10,385.39	-9,029.52	693.42	9,055.87	1.99	-1.84	0.75
19,505.00	91.05	179.24	10,384.34	-9,122.50	694.89	9,148.73	0.93	0.87	0.31
19,599.00	86.51	177.73	10,386.34	-9,216.42	697.37	9,242.60	5.09	-4.83	-1.61
19,692.00	86.43	178.87	10,392.07	-9,309.20	700.13	9,335.35	1.23	-0.09	1.23
19,785.00	88.05	178.45	10,396.55	-9,402.07	702.30	9,428.14	1.80	1.74	-0.45
19,878.00	89.17	177.09	10,398.80	-9,494.96	705.92	9,521.06	1.89	1.20	-1.46
19,972.00	90.46	179.02	10,399.11	-9,588.90	709.11	9,615.00	2.47	1.37	2.05
20,065.00	90.21	178.09	10,398.56	-9,681.87	711.45	9,707.90	1.04	-0.27	-1.00
20,159.00	90.80	178.70	10,397.74	-9,775.83	714.09	9,801.82	0.90	0.63	0.65
Final MWD Survey @ 20159'MD									
20,250.63	90.80	178.70	10,396.46	-9,867.43	716.16	9,893.34	0.00	0.00	0.00
Tigercat Fed Com 1H LTP									
20,250.86	90.80	178.70	10,396.45	-9,867.66	716.17	9,893.57	0.00	0.00	0.00



Survey Report

Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 8, T 26 S., R 33 E
Well: Tigercat Federal Com #1H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Tigercat Federal Com #1H
TVD Reference: KB=26' @ 3348.00ft (Scandriil Freedom)
MD Reference: KB=26' @ 3348.00ft (Scandriil Freedom)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
LTP (330 FNL) @ 20250.86'MD - Tigercat Fed Com 1H T @ 9900'VS									
20,302.00	90.80	178.70	10,395.74	-9,918.78	717.33	9,944.65	0.00	0.00	0.00
PTD @ 20302'MD - Tigercat Fed Com 1H BHL									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
9,750.00	9,725.32	276.83	542.63	First MWD Survey @ 9750'MD
10,335.87	10,220.68	28.54	579.39	FTP (330 FNL) @ 10335.87'MD
20,159.00	10,397.74	-9,775.83	714.09	Final MWD Survey @ 20159'MD
20,250.86	10,396.45	-9,867.66	716.17	LTP (330 FNL) @ 20250.86'MD
20,302.00	10,395.74	-9,918.78	717.33	PTD @ 20302'MD

Checked By: _____ Approved By: _____ Date: _____